|  |  |
| --- | --- |
| **Course Title:** | Pharmaceutics II |
| **Course Code:** | **PHCU 433** |
| **Program:** | **Bachelor of Pharmaceutical Sciences (B.Pharm.Sc.)** |
| **Department:** | **Pharmaceutics** |
| **College:** | **Pharmacy** |
| **Institution:** | **Najran University** |

Table of Contents

[A. Course Identification 3](#_Toc951372)

[6. Mode of Instruction (mark all that apply) 3](#_Toc951373)

[B. Course Objectives and Learning Outcomes 3](#_Toc951374)

[1. Course Description 3](#_Toc951375)

[2. Course Main Objective 3](#_Toc951376)

[3. Course Learning Outcomes 4](#_Toc951377)

[C. Course Content 4](#_Toc951378)

[D. Teaching and Assessment 4](#_Toc951379)

[1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods 4](#_Toc951380)

[2. Assessment Tasks for Students 5](#_Toc951381)

[E. Student Academic Counseling and Support 5](#_Toc951382)

[F. Learning Resources and Facilities 5](#_Toc951383)

[1.Learning Resources 5](#_Toc951384)

[2. Facilities Required 5](#_Toc951385)

[G. Course Quality Evaluation 6](#_Toc951386)

[H. Specification Approval Data 6](#_Toc951387)

# A. Course Identification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1. Credit hours:** | | | | 3 (2+1) | | | | | | | | | | | | |
| **2. Course type** | | | | | | | | | | | | | | | | |
| **a.** | University | |  | | College | | | **√** | Department | | | |  | Others |  |  |
| **b.** | | Required | | | | **√** | Elective | | |  |  | | | | | |
| **3. Level/year at which this course is offered:** | | | | | | | | | | | | 7th level | | | | |
| **4. Pre-requisites for this course** (if any)**: Pharmaceutics I (PHCU 332)** | | | | | | | | | | | | | | | | |
| **5. Co-requisites for this course** (if any)**:** | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | |

## 6. Mode of Instruction (mark all that apply)

| **No** | **Mode of Instruction** | **Contact Hours** | **Percentage** |
| --- | --- | --- | --- |
| **1** | **Traditional classroom** | 60 | 100 |
| **2** | **Blended** |  |  |
| **3** | **E-learning** |  |  |
| **4** | **Correspondence** |  |  |
| **5** | **Other** |  |  |

**7. Actual Learning Hours** (based on academic semester)

|  |  |  |
| --- | --- | --- |
| **No** | **Activity** | **Learning Hours** |
| **Contact Hours** | | |
| **1** | **Lecture** | 30 |
| **2** | **Laboratory/Studio** | 30 |
| **3** | **Tutorial** | - |
| **4** | **Others** (specify) | - |
|  | **Total** | 60 |
| **Other Learning Hours\*** | | |
| **1** | **Study** | 40 |
| **2** | **Assignments** | 20 |
| **3** | **Library** | - |
| **4** | **Projects/Research Essays/Theses** | - |
| **5** | **Others** | - |
|  | **Total** | 60 |

**\*** The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

# B. Course Objectives and Learning Outcomes

|  |
| --- |
| 1. Course Description This course will deal with the formulation, preparation and evaluation of solid dosage form. The following main subject will be covered, tablet, design and manufacturing and evaluation, capsules preparation, evaluation and manufacturing, suppositories dosage forms including preparation and evaluation. |
|  |
| 2. Course Main Objective |
| The course deals with studying the pharmaceutical concept of the solid dosage forms, its preparation and properties. |

## 3. Course Learning Outcomes

| **CLOs** | | **Aligned****PLOs** |
| --- | --- | --- |
| 1 | **Knowledge:** |  |
| 1.1 | State the different Solid dosage forms, their advantages and application in pharmacy | K3 |
| 1.2 | Identify the type and function of additives/ excipients for the design of specific solid dosage form | K3 |
| **2** | **Skills :** |  |
| 2.1 | Plan strategies to design and formulate specific dosage forms for a specific therapeutic effect | S2 |
| 2.2 | Interpret the techniques used in the production of solid dosage forms | S3 |
| **3** | **Competence:** |  |
| 3.1 | Demonstrate practical working in a group with guidance or independence | C1 |
| 3.2 | Use of advanced techniques in developing solutions to complex issues in the field of work. | C3 |

# C. Course Content

|  |  |  |
| --- | --- | --- |
| **No** | **List of Topics** | **Contact Hours** |
| 1 | General introduction: pharmaceutical terms and definitions of all solid dosage forms. | 2 |
| 2 | **Tablet**: advantages, disadvantages and ideal properties of tablets.  Formulation of the tablet. | 2 |
| 3 | Tablet manufacturing methods  Tablet compression machine | 2 |
| 4 | Tableting problems | 2 |
| 5 | Quality control of tablets | 2 |
| 6 | Tablet coating: sugar coating, film coating, compression coating.  Film defects | 4 |
| 7 | Modified release tablet | 4 |
| 8 | **Capsules**: introduction, advantages, disadvantages. | 2 |
| 9 | Hard gelatin capsules: formulation, manufacturing, capsule sizes | 2 |
| 10 | Soft gelatin capsules: formulation, manufacturing, capsule filling. | 2 |
| 11 | **Suppositories**: definition, types, advantages, disadvantages, Ideal suppository bases. | 3 |
| 12 | **Microencapsulation**: definition, advantages, disadvantages, microcapsules, techniques-air suspension, Coacervation phase separation technique. | 3 |
| **Total** | | 30 |

|  |  |  |
| --- | --- | --- |
| **No** | **List of Topics (Practical)** | **Contact Hours** |
| 1 | Introduction. | 2 |
| 2 | Flow Properties-Angle of repose | 2 |
| 3 | Manufacturing of Tablet-Wet granulation | 2 |
| 4 | Manufacturing of tablet-Dry granulation & Direct compression | 2 |
| 5 | Processing of tablet manufacturing- Excipients, Diluents and Binders | 2 |
| 6 | Processing of tablet manufacturing- Disintegrants, Lubricants, Antiadherent , Glidant | 2 |
| 7 | Quality control test of tablet- General appearance & Weight variation | 2 |
| 8 | Quality control test of tablet-Friability test and hardness | 2 |
| 9 | Calculation based on formulation of different dosage form (tablet, suppositories) | 2 |
| 10 | Preparation of Suppositories | 6 |
| 11 | Preparation of tablet | 2 |
| 12 | Revision | 4 |
| **Total** | | 30 |

# D. Teaching and Assessment

## 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

| **Code** | **Course Learning Outcomes** | **Teaching Strategies** | **Assessment Methods** |
| --- | --- | --- | --- |
| **1.0** | **Knowledge** | | |
| 1.1 | State the different Solid dosage forms, their advantages and application in pharmacy | Lectures | Theoretical exam |
| 1.2 | Identify the type and function of additives/ excipients for the design of specific solid dosage form | Lectures | Theoretical exam |
| … |  |  |  |
| **2.0** | **Skills** | | |
| 2.1 | Plan strategies to design and formulate specific dosage forms for a specific therapeutic effect | Lectures and practical | Theoretical exam  Practical exam |
| 2.2 | Interpret the techniques used in the production of solid dosage forms | Lectures and practical | Written exam  Practical exam |
| 2.3 | Communicate verbally the recent advances in the solid pharmaceutical formulations | Presentation Assignment | Online Presentation session  Observation card |
| **3.0** | **Competence** | | |
| 3.1 | Demonstrate practical working in a group with guidance or independence | Practical  Group/open discussions | Practical exam  Online Presentation Assignment  Observation cards |
| 3.2 | Use of advanced techniques in developing solutions to complex issues in the field of work | Practical | Practical exam |
| … |  |  |  |

## 2. Assessment Tasks for Students

| **#** | **Assessment task\*** | **Week Due** | **Percentage of Total Assessment Score** |
| --- | --- | --- | --- |
| **1** | midterm exam 1 (theory) | 6 | 15% |
|  | midterm exam 2 (theory) | 10 | 15% |
| **3** | Quiz (practical) | 9 | 5% |
| **4** | Assignment (presentation) | 13 | 5% |
| **5** | Observation card in lab | 2-12 | 5% |
| **6** | Final Practical exam | 15 | 15% |
| **7** | Final Written exam | 17-16 | 40% |

**\*Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

# E. Student Academic Counseling and Support

|  |
| --- |
| **Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :** |
| Office hour : (04 hour per week + appointments)  Help session : (Problem solving): As required |

# F. Learning Resources and Facilities

## 1.Learning Resources

|  |  |
| --- | --- |
| **Required Textbooks** | 1). Allen L.V., Popovich N. G. and Ansel H. C. Ansel`s Pharmaceutical Dosage Forms and Drug Delivery Systems, 10th Edition, 2015, Lippincott Williams & Wilkins |
| **Essential References Materials** | 1. Aulton’s Pharmaceutics -The Design and Manufacture of Medicines: Fourth edition, Elsevier publication, 2014   (2). Allen L.V., Popovich N. G. and Ansel H. C. Ansel`s Pharmaceutical Dosage Forms and Drug Delivery Systems, 10th Edition, 2015, Lippincott Williams & Wilkins |
| **Electronic Materials** | https://sdl.edu.sa/SDLPortal/ar/Publishers.aspx  http://dlaf.nu.edu.sa/en/e-libraries  http://www.nu.edu.sa/en/web/deanship-of-libraries-affairs/85  http://lib.nu.edu.sa/DigitalLibbrary.aspx |
| **Other Learning Materials** |  |

## 2. Facilities Required

| **Item** | **Resources** |
| --- | --- |
| **Accommodation**  (Classrooms, laboratories, demonstration rooms/labs, etc.) | 1. Lecture room equipped with data show and internet and enough seats. 2. Laboratory equipped with health and safety tools, internet, and enough seats. |
| **Technology Resources**  (AV, data show, Smart Board, software, etc.) | Computers, data show, sound systems and internet |
| **Other Resources**  (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) |  |

# G. Course Quality Evaluation

| **Evaluation**  **Areas/Issues** | **Evaluators** | **Evaluation Methods** |
| --- | --- | --- |
| Effectiveness of teaching and assessment | Students | Direct (online questionnaire) |
| Extent of achievement of course learning outcomes | Students  Peer reviewer (department) | Direct  Indirect (comparison to the previous achievement in the course) |

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

**Assessment Methods** (Direct, Indirect)

# H. Specification Approval Data

|  |  |
| --- | --- |
| **Council / Committee** | Pharmaceutical department |
| **Reference No.** | Meeting number 1 |
| **Date** | 10/09/2019 |